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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,586	10/24/2003	Yorimichi Dairoku	45934	6944

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ROYLANCE, ABRAMS, BERDO & GOODMAN, L.L.P.  
1300 19TH STREET, N.W.  
SUITE 600  
WASHINGTON,, DC 20036

EXAMINER
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BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1713

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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<b>Office Action Summary</b>	Application No. 10/691,586	Applicant(s) DAIROKU ET AL.	
	Examiner Michael Bernshteyn	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-5 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 November 0203 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office Action follows a response filed on October 2, 2006. Applicants have amended claim 1; no new claims were added or cancelled.
2. In view of the amendment and remarks, the rejection of claim 1 under 35 U.S.C. § 112, 1<sup>st</sup> paragraph has been withdrawn.
3. Claims 1-4 are active.

### ***Claim Rejections - 35 USC § 103***

4. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.
5. Claims 1-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable as obvious over Ballard et al. (U. S. Patent 3,988,509) in view of Wu et al. (U. S. Patent 6,252,016), for the rationale recited in paragraph 2 of Office Action dated on January 26, 2006.

### ***Response to Arguments***

6. Applicants traverse the rejection under 35 U.S.C. § 103(a) of claims 1-4 as being unpatentable as obvious over Ballard et al. in view of Wu et al. Applicant's arguments have been fully considered but they are not persuasive.
7. Applicants contend that Ballard et al. does not disclose or suggest a process for producing water-absorbent resins as in the claimed invention. Furthermore, Ballard et al. does not disclose a stirring apparatus in a supply pipe line to produce a monomer

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liquid in a stirred state or introducing the initiator into the supply pipe line to mix with the monomer while in a stirred state (page 6, 2<sup>nd</sup> paragraph).

Ballard et al. corresponds substantially to Comparative Example 1 of the specification. Ballard et al. introduces the initiator through line 4 immediately upstream of the reactor 5. Accordingly, the initiator of Ballard et al is not introduced into the monomer liquid while in a stirred state. Comparative Example 1 in the specification was carried out without the use of a stirring apparatus in the supply pipe line. The polymerization initiator was added to the flow without the use of a stirring apparatus in the same manner as in Ballard et al. Thus, Ballard et al. corresponds to Comparative Example 1 (page 6, 3<sup>rd</sup> and 4<sup>th</sup> paragraphs).

8. Applicants contend that Wu et al. also does not disclose mixing an initiator in a monomer stream where the monomer stream is in a stirred state. Thus, Wu et al. provides no motivation or incentives to modify the process of Ballard et al. Wu et al. discloses feeding the initiator into a mixing apparatus and forming a stable emulsion. The resulting emulsion is then delivered to a supply pipe line to the reactor. Thus, the emulsion is formed before feeding to the pipe line. The reactor is the non-cylindrical channel illustrated in Wu et al. Wu et al. does not suggest introducing an initiator into a stirred monomer liquid in a flow pipe line. Thus, it would not have been obvious to one of ordinary skill in the art to modify Ballard et al. in the manner suggested in the Action (pages 8-9, the bridging paragraph).

9. It is noted that Comparative Example 1 states that the polymerization initiator 30 was caused to join into a unstirred flow of the monomer liquid 20 using a supply pipe 10

as not equipped with a static mixer as a stirring apparatus (Specification, page 21, lines 24-26). As it was mentioned in the previous Office Action, Wu discloses that for all Examples, monomer emulsions were prepared by admixing butyl acrylate, methyl methacrylate, methacrylic acid, an anionic surfactant, an electrolyte, a chelating agent, and water in a vessel. The admixture was stirred until an emulsion was formed (col. 7, lines 11-15). In the example #1 a monomer emulsion was fed from monomer tank. The feed tank was equipped with a funnel, a dip pipe, an agitator, cooling capability, and a weigh scale. The monomer emulsion in the feed tank was constantly agitated in order to insure homogeneity (col.7, lines 18-23).

Therefore, the unexpected results are not commensurate in scope with the claims.

10. It is noted that Applicants intended to show the difference in these comparative example between the properties of the closest products. For example, it is necessary to find out the difference of the above properties between the process of the reference, which contains all limitations, and the instantly claimed process. However Applicants has not met the duty to prove that the process of the reference is necessarily different from the instantly claimed process.

11. Applicants again contend that the vessel of Wu et al. is clearly not a supply pipe line. Furthermore, the vessel of Wu et al. is disclosed as an emulsion-forming tank including a stirring apparatus and not a pipe (page 9, 3<sup>rd</sup> paragraph).

12. It is worth to repeat again that according to Cambridge Dictionaries online ([www.onelook.com](http://www.onelook.com)), vessel (tank) is a tube that carries liquids, and pipe is also a tube

inside which liquid or gas flows from one place to another. Therefore, in a broad sense, there is no significant difference between vessel and pipe in the absence of pipe size defined in the claims.

13. Applicants contend that claims 2-4 are also not obvious over the cited art. Ballard et al. and Wu et al. do not disclose or suggest the monomer liquid having a concentration of not less than 40 weight % as in claim 2, or the monomer liquid having a temperature of not lower than 50°C in the supply pipe line. In particular, claim 3 depends upon claim 1 and recites that the monomer liquid while being continuously stirred has a temperature of not lower than 50° when the polymerization initiator is introduced into the stirred monomer liquid. Ballard et al. and Wu et al. do not disclose a continuously stirred monomer liquid in a supply pipe line, and thus, do not disclose or suggest the claimed temperature (page 10, 3<sup>rd</sup> paragraph).

14. It is noted that both references clearly disclose a continuous process for preparing polymers. Ballard's reference discloses continuous process for the production of reduced melt index, low gel content ethylene copolymers comprising the in-line addition of a solution of a free radical initiator into the polymer stream under turbulent conditions (abstract). Wu et al discloses a continuous process for preparing polymers.

With regard to the limitations of instant claim 2, Ballard discloses that about 0.25 to 20% of solvent, based upon the weight of copolymer, is introduced into the reaction mixture (claims 11-13, col. 10, lines 47-55). Thus, it is easy to calculate that a monomer liquid having a concentration 80-99.75% is within the claimed range (not less than 40 weight %).

With regard to the limitations of instant claim 3, Ballard discloses that feed stream 1 enters reactor 5 at a temperature substantially lower (usually 100°C or more below reaction temperature) than that at which the polymerization is run. Usual feed temperatures are in the range of about 0°C-60°C (col. 3, lines 63-67). So, the claimed range of temperature before the polymerization process is obvious in view of Ballard.

15. In response to applicant's argument that Ballard and Wu references is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Ballard's reference discloses continuous process for the production of reduced melt index, low gel content ethylene copolymers comprising the in-line addition of a solution of a free radical initiator into the polymer stream under turbulent conditions (abstract). Wu et al discloses a continuous process for preparing polymers. The continuous process includes the steps of continuously feeding a reaction mixture containing a monomer into a non-cylindrical channel, continuously controlling the temperature of the non-cylindrical channel by exposing the surface of the non-cylindrical channel not exposed to the monomer to a temperature control medium, polymerizing the monomer in the non-cylindrical channel, and continuously removing the polymer from the non-cylindrical channel. The continuous process is suitable for the preparation of polymers containing ethylenically unsaturated monomers as polymerized units by emulsion polymerization, solution polymerization, and suspension

polymerization (abstract). Certainly, both references belong to the same field of endeavor concerning the continuous process for preparing polymers containing ethylenically unsaturated monomers and reasonably pertinent to the particular problem with which the applicant was concerned.

16. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

17. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn  
Examiner  
Art Unit 1713

MB  
12/15/2006

  
DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700